

**SOC 101B (FOCUS seminar)**  
**Biology and Society**  
**T-Th 9:10-10:25 Soc/Psych 331**

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“**Biology and Society**” will focus on the reciprocal relationships between the biological sciences and social institutions. On the one hand, the sciences are embedded in social structures related to the economy, the state and other cultural institutions that influence their development. On the other, scientific change and technological developments can transform social structures, such as the economy, the state and the family. A feature of the relationships between science, technology and society is asynchrony, or the frequent socio-temporal mismatch between technical capabilities and social and moral propensities to implement them. Another feature is the moral ambivalence towards or resistance to biological theories (e.g. evolution), methods (e.g. cloning), and outcomes (genetic property disputes). Yet another feature is the growing dominance of market institutions across all social domains, including science, turning natural and human entities into commodities. This course will consider these complex relationships through the study of historical and contemporary cases of biological technologies in their social contexts.

The seminar format of the course requires students to be prepared daily to lead and/or participate in the discussion of reading materials. Discussion leaders over the semester will be assigned during the first week of the course. Other requirements include three short (4-5 pages) critical essays (30%), one take-home examination (30%), and a take-home final (30%). The quality of daily participation will be evaluated and contribute to the final 10% of the grade.

Class participation and discussion leadership. Students are expected to maintain all of the reading assignments throughout the semester. Discussion leaders are expected to prepare oral summaries and comments on selected readings assigned to them and to lead discussions on the days assigned. A discussion should normally include (1) a general overview statement about the reading (what is this about?), (2) key highlights (what are the major events/points covered?), and (3) comments regarding the relevance of the readings for the purposes at hand (so what?).

Critical essays. Critical essays should synthesize several of the required readings to respond to the question posed. In addition, students are expected to find outside materials from journals, news accounts, or other sources that add to the response, above and beyond the required readings. Good sources are available on databases (e.g. Lexus-Nexus), in serials and journals (e.g. Scientific American, or Tuesday Science News section of the New York Times, etc.), and other media.

The take-home midterm and final will require writing papers based on research using databases to find primary sources. A workshop on using databases will be arranged with library reference staff.

### **Reading Assignments**

James D. Watson, The Double Helix, W.W. Norton Critical Edition (1980)

Paul Rabinow, Making PCR, University of Chicago Press (1996)

Barry Werth, The Billion-Dollar Molecule: One Company’s Quest for the Perfect Drug, Simon-Schuster (1994)

\*Reserved (Lilly Library) or Handout

~Online readings from journals [Access through Perkins online catalogue by journal title from databases like ProQuest Direct, Ingenta, Academic Search Elite through EBSCOhost, Expanded Academic Index, Info Trac Onefile, etc].

*[Discussion leaders in brackets below]*

## COURSE SCHEDULE

**Aug 27, 29 Introduction to the Course: From “Esoteric” Science to Commercialization**

The Double Helix (J.D. Watson), Introduction to p. 134

\*Merton, “The Ethos of Science” and “The Reward System of Science”  
selected from R. K. Merton (1986) On Social Structure and Science.  
St. Martins Press.

**Sept 3,5 Scientific Norms Under the Light of Controversy**

The Double Helix (continued)

“Three Other Perspectives”

“The Review Of Reviews”

**Sept 10-12 Theories of Science & Society: Norms of Science, Intellectual Property and Commercialization**

\*Kuhn, “The Nature and Necessity of Scientific Revolutions.” Selected from the  
Structure of Scientific Revolutions (3<sup>rd</sup> Ed) by T. S. Kuhn (1996). Chicago  
*[Shivum, Erin, Katherine]*

\*Callon. 1995. Four Models for the Dynamics of Science. Ch 2 in  
The Handbook of Science and Technology Studies edited by  
Jasanoff et al.. Sage Publications.  
*[David, Ella, Taylor]*

\*Etzkowitz and Webster. 1995. Science as Intellectual Property. Ch 21 in  
The Handbook of Science and Technology Studies edited by  
Jasanoff et al. Sage Publications.  
*[Troy, Mike, Beverly]*

*Sept 17: 1st Critical Essay: Is science normatively unique?*

**Sept 17-19 The Organization of Scientific Work and Controversy Over Intellectual Property**

Making PCR (Rabinow)

Introduction

Ch One “Toward Biotechnology” *[Michael]*

Ch Two “Cetus Corporation: A Credible Force” *[Aaron]*

Ch Three “PCR: Experimental Milieu + the Concept” *[Jean]*

Ch Four “From Concept to Tool” *[Kofi]*

Ch Five “Reality Check” *[Shu]*

Conclusion “A Simple Little Thing” *[Stephen]*

**Sept 24-26**

**Biological Research Laboratories as Social Structures**

~Jordan and Lynch. 1998. The Dissemination, Standardization and  
Routinization of a Molecular Biological Technique.  
Social Studies of Science 28/5-6: 773-800.  
*[Michael, Kofi, Stephen, Aaron]*

**Oct 1-8**

**Laboratories (continued)**

~Owen-Smith. 2001. Managing laboratory work through skepticism.  
American Sociological Review 66: 427-452.  
*[Shivum, Erin, Katherine, Jean]*

\*Knorr-Cetina: Two pieces  
“Laboratory Studies” *[David, Ella, Taylor, Shu]*  
“What is a Laboratory?” *[Troy, Mike, Beverly]*

*Oct 10: 2<sup>nd</sup> Critical Essay: How is the laboratory a sociologically  
interesting unit of study?*

**Oct 11-15**

**FALL BREAK**

**Oct 17**

**Library Research Seminar: How to Search Online Databases**

**Oct 22-24**

**Take-Home Midterm due Oct 24 Class time**  
**You will use online databases to search for primary materials a**  
**48-hour take-home examination.**

**Oct 29-31**

**Human Capital, Social Capital and the Origins of the Biotechnology  
Industry**

~Porter, Michael E. 1998. Clusters and the new economics of competition.  
Harvard Business Review (Nov-Dec): 77-90.  
*[Michael, Aaron, Jean]*

~ Zucker L G. Darby, MR, and Brewer, M.B. 1997. Intellectual human capital  
and the birth of US biotechnology enterprises. American Economic Review  
88: 290-306.  
*[Kofi, Shivum, Beverly, Erin]*

\*Cohen, S.S. and G. Fields. 2000. Social capital and capital gains: an examination of social capital in silicon valley. Ch 9 in Understanding Silicon Valley edited by M. Kenney. Stanford University.  
*[Taylor, Katherine, David]*

**Nov 5-7**                    **From Boutique Laboratory to Big Pharma**

\*Henderson, R., L. Orsenigo and G. P. Pisano. 1999. The pharmaceutical industry and the revolution in molecular biology: interactions among scientific, institutional, and organizational change. Ch. 7 in Sources of Industrial Leadership edited by Mowery and Nelson: 267-311.  
*[Shu, Ella, Troy]*

~Audretsch and Stephan. (1996). Company-Scientist Locational Links: The Case of Biotechnology. The American Economic Review 86: 641-652.  
*[Stephen, Mike]*

\*Zweiker (2001). The Genomics Industry. Ch 15 in Transducing the Genome. McGraw-Hill.  
*[Everyone]*

**Nov 12-14**                The Billion Dollar Molecule (Werth)

Part One: The Story

Ch. 1-2 *[Shivum, Beverly]*  
Ch 3-4 *[Erin, Michael]*  
Ch 5-6 *[Katherine, Aaron]*  
Ch 7-8 *[David, Jean]*  
Ch 9-10 *[Ella, Kofi]*

**Nov 19-21**                The Billion Dollar Molecule (Werth) – continued

Part Two and Epilogue: The Chase and Finding the Pony

Ch 11-12 *[Taylor, Shu]*  
Ch 13-14 *[Troy]*  
Ch 15-16 *[Stephen]*  
Ch 17-18 *[Mike]*  
Ch 19-20 *[Everyone]*

**Nov 21**                    *3<sup>rd</sup> Critical Essay: Is drug development, like war, a strategic engagement that is won or lost through attrition along multiple fronts?*

**Nov 26**                    **The Social Implications of the Commercialization of Scientific Findings: Identity And Property**

~Daemmrich. 1998. The Evidence Does Not Speak for Itself: Expert Witnesses and the Organization of DNA-Typing Companies. Social Studies of Science 28/5-6: 741-772.  
*[Michael, David, Kofi, Troy]*

~Anderlik and Rothstein. 2002. DNA-Based Identity Testing and the Future of the Family: A Research Agenda. American Journal of Law & Medicine 28: 215-232.  
*[Shivum, Ella, Shu, Stephen]*

Nov 28-  
Dec 1

**THANKSGIVING**

Dec 3-5

**More Social Implications**

~Jasanoff. 1998. The Eye of Everyman: Witnessing DNA in the Simpson Trial. Social Studies of Science 28/5-6: 713-740.  
*[Beverly, Aaron, Jean, Mike]*

~Harrison. 2002. Neither *Moore* nor the Market: Alternative Models for Compensating Contributors of Human Tissue. American Journal of Law & Medicine 28: 77-105.  
*[Erin, Katherine, Taylor]*

**Take-home Final Due on date assigned to the course by Registrar**